505 First World War grain, wood, gypsum and building stone (250 000 t) were transported on the river, while later only wood was shipped on the upper reaches.

133 The Kuban (800 km long, with a basin of about 60 000 sq.km)
487 has its source in Caucasian glaciers and is navigable all the
505 year round for a stretch of 350 km. It is true that gravel and sandbanks make shipping difficult. In 1935 230 000 t of freight were shipped down the river. The Boh (709 km long, with a basin of 64 000 sq.km) has little water and many rapids. 100 km are navigable, but traffic is negligible. Of the Don (1984 km long, with a basin of 425 000 sq.km) which is the fourth biggest river in Europe, only the navigable lower reaches belong to Ukraine. Goods transported are above all grain, coal, salt- 254 000 t in 1935. Conveyance of passengers is negligible.

Its right tributary, the Donets (1 020 km, with a basin of 99 000 km) crosses the Donets Basin and is navigable for a stretch of 350 km. The Buh, Vepr and Syan, Prut, Seret and Tysa are only important for floating down logs.

● 503 The condition of the Ukrainian waterways is not imposing, though Ukraine comes fourth in Europe with its 6 200 km of navigable rivers. There is no thorough system of regulating the rivers or building canals to connect them, though this has been planned for decades. There are only 200 km of canals. The following artificial systems of communication by water have been planned:

a) reconstruction of the Viking way and the linking up of Leningrad, Kyiv and Kherson (2 canals each 30 km long);

b) a connection between Riga and Kherson, in place of the antiquated route via the Beresina which has existed since 1805;

c) development of the now inadequate route (Oginski-Canal etc. 343 km) between the Dnipro or the Pripyat, Pina and Jasiolda and — via the Shara — the Memel linking Kherson with Königsberg;

d) (Royal canal etc. 233 km) between the Pina and — via the Mukhovets — the Buh and the Vistula, connecting Kherson with Danzig;

3: Mirchuk S-4 (no date) 1949 RDl Ukraine RDl

e) the construction of a canal from the Dnipro, via the Desna and the Bolva (30 km) to the Zizdra and Oka, and so to Moscow and the Volga; 503

f) a canal between the Dnipro and the Donets, via Samara and Vovcha;

g) a connection between Danzig and the Black Sea via the Vistula and the Syan, linking up with the Dnister and perhaps the Prut;

h) a canal between the Caspian and the Black Sea, via the valley of the Manych, a tributary of the Don and the Sea of Oziv.

5. Sea Traffic

The position of Ukraine like a fan, spreading out from the Black Sea and the Sea of Oziv is particularly favorable for the export of mass products, while the coast of the Black Sea has not many natural harbors. Ports can, however, be built in the limans of the river-mouths. The coast of the Sea of Oziv is definitely unfavorable. It is only recently that harbor equipment has been mechanised and the harbors themselves improved. 133 504

Odessa is the third largest harbor in Russia, coming after Riga and Leningrad and lying in a bay 30 km north-east of the Dnister liman which is too shallow for shipping. The harbor is well constructed and freezes only for 2—3 weeks, which is easy to manage. Odessa is the only port in Ukraine where exports practically balance imports (in 1913: 2113 and 2061 t. average for 1930—1934: 1234 and 1550 thousand t). These figures refer to the total turn-over, in which figures for coastal trade exceed those for actual exports. In the former the import figures were higher and in the latter the export figures. 505

In Odessa grain forms the biggest part of the freight which also includes sugar, wood, methylated spirits and oil-cake. The imports are groceries, fruit, textile raw materials, chemicals etc. The town had become an important financial center with a stock exchange.

Mykolaiv on the liman of the Boh has a well built harbor with good connections with the hinterland. Grain and ore from 504

Kryvyj Rih and Nikopil are the chief exports, imports being much less significant.

Since the harnessing of the rapids of the Dnipro, Kherson has developed quickly. The harbor lies on the Dnipro liman which is 60 km long, 5.20 km wide and 5—9 m. deep. Grain and wood are the most important freights handled.

Novorossiiske, the largest harbor in Northern Caucasia is the port for the grain from the Kuban and the Volga areas, and the wood that is transported by rail and on the Volga from Stalingrad, cement from the local factories etc.

Tuapse, in the most easterly area of Ukraine exports grain and, above all, petroleum from Maikop and valuable Caucasian wood. In Theodosia grain and fruit make up the freight while Sevastopil is exclusively a harbor for warships.

Mariupil, an artificial harbor, is the busiest port on the Sea of Oziv. Donets coal is transported for the Kerch furnaces and to countries abroad, also rocksalt from Artemivske and grain. The return freight consists partly of Kerch iron ore for the Donets Basin.

Rostov on the Don exports grain. It had grown at the expense of Taganrih even before the first World War.

Berdianske — not nearly so important as Rostov — owes its trade to the excellent wheat grown in the neighborhood. Henycheske and 10 other small ports play no great part in sea trade.

The Black Sea mercantile fleet was never very big: in 1913 it had only 416 steamers, 22 motor boats and 887 sailing ships with a total tonnage of 473 000 brt-. It only reached pre-war level under the second Five Year Plan. A large proportion of the trade with foreign countries was always carried on foreign ships. In 1934, for instance, there were far more Greek than native ships in the Russian ports on the Black Sea (with the exception of Odessa) — 1 350 000 net registered tons, 37 % of all shipping, compared with 760 000 net registered tons and 21 % native tonnage.

their career and the assurance of a good income for the meagre appointments as an official. It is sufficient just to glance at the statistics of the Russian Empire in order to realize what a gigantic increase in the development of civilization was reached by the effort of the Russian intellectuals and specialists. Public instruction had developed in these fifty years to an enormous extent, infant mortality had fallen by more than 60 per cent, epidemics had experienced a great fall, as also cattle diseases, and the yield of the land had increased in the southern regions by more than 30 per cent. The improvement of the different breeds of horses and cattle was already evident on the eve of the Great War.

The backward country which Russia was supposed to be in the eyes of Westerners, including also the Ukraine, had in 1912 a big network of telephone lines in the country and especially in the region of Vinnitza, where the organization of the Zemstvos was especially active.

As to the river system, as we have already seen, it is very poor and is limited to four rivers, the Dnieper, the Dniester, the Boug, and the Donietz, of which the Dnieper alone is of any interest. The transport capacity of this one important river has been for ever spoiled by the rapids which make navigation impossible along a considerable distance. It is only after the building of the *Dnieprogues*, whose gigantic barrage had submerged the rapids along a distance of about one hundred kilometres, that an uninterrupted river route was established, linking the upper Dnieper with the Black Sea.

This river drains the greater part of the Ukraine and has left its mark upon the whole historic and economic evolution of the country.

Before the Great War the annual tonnage of transports

9: Prothero G-4 (no date) 1920 RD1 Ukraine RD1

The navigable length of the principal rivers is as follows: 487

	For Shipping. *Miles.*	*For Rafting only.* *Miles.*
Dnieper . .	1,250	136
Desna . .	537	166
Dniester . .	521	35

All the above-mentioned waterways suffer in common from four serious defects. (1) They are frozen for a considerable period of the year. In the basin of the Dnieper traffic was only possible in the first ten years of this century for an average of 230 days above the rapids and 250 below. Other rivers are in a similar case. (2) The volume of water falls rapidly in summer, and in dry seasons lack of water impedes navigation seriously. (3) Wholesale cutting down of the forests on the banks has led to alteration of the beds of the rivers and the splitting up of the channels. (4) Works for the improvement of navigation scarcely exist, not even the most urgent having been undertaken. 487 502

The principal cargoes carried are breadstuffs, wood, and coal. Cereals are embarked in great quantities on the lower Dnieper and Southern Bug for shipment abroad from Kherson and Nikolaev. The upper Dnieper and the Dniester carry timber. 505 439

Navigable canals do not exist in the Ukraine. Should the scheme for a Dvina-Dnieper canal materialize, it would have a noticeable commercial effect upon the towns of Kiev, Yekaterinoslav, Alexandrovsk, and Kherson. 503

(c) *Railways*

Railway System.—There are in the Ukraine three great railway centres, viz. Kiev, Kharkov, and Yekaterinoslav. 496

1. From Kiev a line runs in a westerly direction to Sarny and Kovel, continuing thence to Cholm and Warsaw.

A second line goes in a north-easterly direction to Bakhmach, thence *via* Kursk and Orel to Moscow.

U 185 489 494 of road passengers should increase 7½ times; and the number of buses, by 3,000.

U 185 489 503 The Five-Year Plan also provides for the expansion of river and sea traffic. Small rivers are to be extensively adapted for navigation, and will also be utilized for local hydro-electric power supplies. Shipbuilding yards are to be rebuilt, and the tonnage of river and sea traffic is to be considerably increased. The freight turnover on small rivers of the Ukraine in 1950 is fixed by the Five-Year Plan at 450,000 metric tons.

Pre-War Traffic

U 489 In 1937 the Ukrainian railways handled 313.1 million metric tons of loads, as compared with 165.7 million in 1932. The river transport carried 7.7 million tons (4.7 million in 1932), while in the same year Ukrainian seaports handled 8.6 million tons as against 6.5 million tons in 1932.

SU 497 U 497 The U.S.S.R.'s system of rail transport is perhaps the weakest link in the Soviet economy. In 1937 the railway network of the entire Soviet Union amounted to only 86,400 kilometres (83,400 kilometres in 1933). The construction of additional lines had by no means kept pace with the expansion of industry and agriculture. The Ukraine in 1937 had some 14,400 kilometres of railway lines; and traffic loads in that year amounted to some 313.1 million metric tons. The inadequacy of the system if compared with other European countries is marked. For example, in France (the area of which was approximately equal to that of pre-war Ukraine) the length of the principal lines open for traffic on January 1, 1938, was 42,000 kilometres.

U 727 497 The war has greatly disrupted Ukrainian rail transport. Locomotives, rolling stock and tracks were heavily damaged or destroyed. The problem of rehabilitation is especially serious, because the lack of adequate transport facilities hinders other rebuilding projects. The locomotives and cars taken as reparations from Germany, being chiefly of narrow gauge, are consequently of no use on most existing Soviet tracks.

Production of Long Distance Locomotives

U 397 Before the war the output of long distance locomotives in the Ukraine was as follows.

TABLE XXI

U 397

Ukraine: Pre-War Production of Long Distance Locomotives

Year	Ukrainian S.S.R number	Soviet Union total number
1928	231	479
1932	431	828
1937	880	1,214

Sources: Socialist Construction, Moscow, 1939; and Russia's Economic Front, A. Yugov, New York, 1941.

SU [397] Ukrainian production of long-distance locomotives in 1950 is planned to be 1,000. For the Soviet Union as a whole a target of 2,720 has been fixed: this includes 2,200 steam locomotives, 300 diesel, and 220 electric locomotives. The Ukrainian output of freight cars in 1950 is fixed at 55,500 - more than a third of the target for the whole U.S.S.R., which is 146,000 freight cars.

Motor Vehicles

U 397 SU [397] The number of motor vehicles to be produced in 1950 in the Ukrainian S.S.R. is fixed by the new Five-Year Plan at 25,000 while for the entire Soviet Union the output is as follows: 428,000 trucks, 65,600 passenger cars, and 6,400 motor buses. Apparently the destruction of factories producing motor-vehicles was particularly heavy.

The Five-Year Plan provides for the building in the Ukraine of two motor car assembly plants, as well as a works to produce annually 60,000 motor trucks.

Dnieper-Bug Canal[1]

U 503 497 The Dnieper-Bug Canal, cutting through the Pinak bogs and the Brest forest in Byelorussia, is important as the only water outlet towards the west, connecting the Dnieper, Western Bug, and the Black Sea with the Vistula.

It first took shape at the end of the 18th century under the name of the Imperial Canal. But in those days, being shallow and without sluices, it was of little use for navigation. For ten months in the year the canal was dead. Only at high water, in the springtime, could a small quantity of timber be rafted along its course.

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1 Soviet News July 24, 1946.

● 503
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727 The canal was reconstructed just before the German invasion. In record time, eight months, ten large sluices were built in two stairways of five locks each; and in August 1940 the first river vessels passed through from the Black Sea to the Vistula.

The Germans destroyed these sluices and choked the canal so that all the hydro-technical structures had to be rebuilt anew. The speed of reconstruction was such that by the middle of 1946 vessels and barges were passing freely from the Vistula along the Dnieper with cargoes of timber for the Ukraine.

At present the western Bug is navigable only in April and May. When it has been converted into a normal waterway, effective communication will be established between the Ukrainian and Byelorussian river basins and the Vistula, Oder, Elbe, and Rhine.